

Amendments to the Claims

This listing of claim will replace all prior versions and listings of claim in the application.

- 1) (currently amended) A circuit, comprising:
 - a clock circuit capable of generating a clock signal in response to an adjustable phase step-size; and
 - a sampler, coupled to the clock circuit, capable of receiving, in response to the clock signal, a data signal having a variable data bit-rate,
 - wherein the circuit includes at least four stages, each having a respective stage output, wherein the clock circuit includes stall logic capable of holding the third and fourth stage outputs in response to the first and second stage outputs.
- 2) (original) The circuit of claim 1, wherein the clock circuit includes a phase adjust step-size logic capable of outputting an adjustable magnitude of the phase step-size in response to the variable data bit-rate.
- 3) (original) The circuit of claim 1, wherein the phase adjust step-size logic is capable of outputting an adjustable direction of the phase step-size in response to the variable data bit-rate.
- 4) (cancelled)
- 5) (currently amended) The circuit of claim 1 4, wherein the circuit comprises 6 pipeline stages.
- 6) (original) The circuit of claim 1, wherein the variable data bit-rate is from approximately 0 parts per million ("ppm") to approximately 5000 ppm.
- 7) (original) The circuit of claim 1, wherein the adjustable phase step-size is adjusted in response to a first step-size corresponding to data phase drift and a second step-size corresponding to the variable data bit-rate.

- 8) (original) The circuit of claim 7, wherein the first step size and the second step-size are summed to obtain the adjustable phase step-size.
- 9) (cancelled)
- 10) (currently amended) ~~The circuit of claim 9,~~ A circuit, comprising:
a clock circuit capable of generating a clock signal in response to an
adjustable phase step-size; and
a sampler, coupled to the clock circuit, capable of receiving, in response
to the clock signal, a data signal having a variable data bit-rate,
wherein the clock circuit includes an indicator capable of adjusting the
adjustable phase step-size in response to the variable data bit-rate,
wherein the clock circuit includes a counter for obtaining a first step-size
and the indicator provides a second step-size, wherein the first step-size and the
second step-size are summed to obtain the adjustable phase step-size.
- 11) (currently amended) The circuit of claim 9, wherein the indicator includes a state
machine ~~for~~ capable of detecting the variable data bit-rate.
- 12) (currently amended) The circuit of claim 1, wherein the clock circuit includes an
averaging circuit capable of averaging a plurality of up signals to obtain an
average up value and a plurality of down signals to obtain an average down value,
and outputting ~~an adjust signal having the selectable~~ the adjustable phase adjust
step-size in response to a comparison of the average up value and the average
down value.
- 13) (original) The circuit of claim 1, wherein the circuit is included in a receive
circuit coupled to a transmit circuit capable of transmitting the data signal.

- 14) (currently amended) A circuit, comprising:
- a clock circuit capable of generating a clock signal in response to a phase adjust signal;
 - a sampler, coupled to the clock circuit, capable of receiving, in response to the clock signal, a data signal having a variable data bit-rate; and,
 - wherein the clock circuit comprises,
 - a first stage, coupled to the sampler, capable of ~~outputting~~ outputting a first stage output signal in response to ~~the~~ a sampled data signal;
 - a second stage, coupled to the first stage, capable of outputting a second stage output signal in response to the first stage output signal;
 - a third stage, coupled to the second stage, capable of of outputting the phase adjust signal in response to the second stage output signal; and,
 - stall logic, coupled to the first, second and third stages, and capable of holding the phase adjust signal in response to the first and second stage output signals.
- 15) (original) The circuit of claim 14, wherein the first and second stages are successive stages.
- 16) (original) The circuit of claim 14, wherein the first and second stages are included in a phase detector.
- 17) (original) The circuit of claim 14, wherein the third stage is included in a phase adjust controller.
- 18) (currently amended) A circuit, comprising:
- a clock circuit capable of generating a clock signal in response to a phase adjust signal having an adjustable step-size; and,
 - a sampler capable of receiving, in response to the clock signal, a data signal having a variable data bit-rate;
 - wherein the clock circuit includes,

a first stage, coupled to the sampler, capable of outputting a first stage output signal in response to ~~the~~ a sampled data signal;

a second stage, coupled to the first stage, capable of outputting a second stage output signal in response to the first stage output signal;

a third stage, coupled to the second stage, capable of outputting the phase adjust signal, having a first step-size, in response to the second stage output signal;

stall logic, coupled to the first, second and third stages, capable of holding the phase adjust signal in response to the first and second stage output signals;

an indicator, coupled to the third stage, capable of outputting a second step-size in response to the variable data bit-rate; and,

a counter, coupled to the third stage and the indicator, capable of outputting the phase adjust signal having ~~an~~ the adjustable step-size ~~responsive in response~~ in response to the first and second step-sizes.

- 19) (original) The circuit of claim 18, wherein the first and second stages are successive stages.
- 20) (original) The circuit of claim 18, wherein the first and second stages are included in a phase detector.
- 21) (currently amended) The circuit of claim 18, wherein the counter is capable of summing the first step-size and the second step-size to provide the adjustable step-size.¬
- 22) (currently amended) The circuit of claim 18, wherein the indicator includes a state machine capable of ~~for~~ detecting the variable data bit-rate.
- 23) (currently amended) The circuit of claim 22, wherein the indicator is capable of outputting a first variable frequency phase step-size ~~responsive in response~~ in response to a

first variable bit-rate in a first state and capable of outputting a second variable frequency phase step-size ~~responsive~~ in response to a second variable bit-rate in a second state.

- 24) (original) The circuit of claim 23, wherein the first state transitions to a second state responsive to a difference of a number of up signals to a number of down signals, during a period of time, and a threshold value.
- 25) (currently amended) A circuit comprising,
a clock circuit configured to generate a clock signal in response a phase adjust signal; and
a sampler configured to receive a data signal in response to the clock signal;
wherein the clock circuit comprises,
an averaging circuit capable to output the phase adjust signal in response to an average up signal, obtained from a plurality of up signals in a predetermined period of time, and an average down signal, obtained from a plurality of down signal signals in the predetermined period of time.
- 26) (original) The circuit of claim 25, wherein the averaging circuit includes:
a mixer counter capable to output the phase adjust signal.
- 27) (currently amended) The circuit of claim 25, wherein the averaging circuit includes:
~~a an accumulator/comparator circuit, coupled to the mixer counter,~~
capable of ~~incrementing or decrementing~~ adjusting the phase adjust signal responsive in response to a comparison of the average up value and the average down value.

- 28) (original) The circuit of claim 25, wherein the circuit is included in a receive circuit coupled to a transmit circuit capable of transmitting the data signal.
- 29) (currently amended) An apparatus, comprising:
a transmit circuit capable of transmitting a data signal ~~having a variable data bit rate~~; and,
a receive circuit ~~capable to generate~~ capable of generating a clock signal in response to the data signal,
wherein the receive circuit includes,
a sampler capable of receiving the data signal in response to the clock signal; and,
a clock circuit, coupled to the sampler, capable of generating the clock signal in response to a phase adjust signal ~~having an adjustable phase step size~~, wherein the clock circuit comprises,
an averaging circuit capable of outputting the phase adjust signal in response to an average up signal, obtained from a plurality of up signals in a predetermined period of time, and an average down signal, obtained from a plurality of down signals in the predetermined period of time.
- 30) (currently amended) A method for tracking a signal ~~having a variable data bit rate~~, comprising ~~the steps of~~:
receiving the signal;
selecting an update rate; and,
selecting an adjustable step-size for an adjust signal responsive in response to the signal, wherein the selecting includes:
averaging a plurality of up signals to obtain an average up value;
averaging a plurality of down signals to obtain an average down value;
outputting the adjust signal in response to the average up value and average down value.

31) (currently amended) The method of claim 30, wherein the receiving step includes:

sampling the signal in response to the adjust signal.

32) (currently amended) The method of claim 30, wherein selecting an adjustable step-size includes:

determining a first step-size based on ~~the~~ a variable data bit-rate of the signal;

determining a second step-size;

summing the first and second step-sizes to obtain the adjustable step-size.

33) (currently amended) A device, comprising:

a sampler capable of obtaining a signal ~~having a variable data bit rate~~ in response to a clock signal; and,

means for adjusting the clock signal in response to a phase adjust signal ~~the variable data bit rate~~, wherein the means for adjusting includes averaging means for outputting the phase adjust signal in response to an average up signal, obtained from a plurality of up signals in a predetermined period of time, and an average down signal, obtained from a plurality of down signals in the predetermined period of time.